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10/018,672	04/18/2002	Joelle Thonnard	BM45395	1681

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EXAMINER	
BASKAR, PADMAVATHI	
ART UNIT	**PAPER NUMBER**
1645	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/18/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/018,672	THONNARD, JOELLE	
	Examiner	Art Unit	
	Padmavathi v. Baskar	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *55-68* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *55,58-64 and 66-68* is/are rejected.

7)☒ Claim(s) *56,57* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Amendment

1. Applicant's amendment filed on 11/14/05 is acknowledged.

Status of claims

2. Claims 27, 35, 38, 43, 44, 46, and 51-54 are canceled.

New claims 55-68 have been added. Newly added claims 55-68,drawn to polypeptide are under examination.

Priority

3. The certified priority document U.K 9914945031.2 (priority under 35, U.S.C. 119 (a)-(d)), 6/25/1999) filed on 12/8/05 is acknowledged

4. As all prosecuted claims are canceled, the rejection of record are moot.

Rejections based on the amendment for new claims

Claim Rejections - 35 USC 112, first paragraph

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 55, 58-64 and 66-68 are rejected under 35 U.5.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant is referred to the revised guidelines on written description available at www.uspto.gov (O.G. published January 30, 2001). This is a written description rejection.

Claims are drawn to an isolated recombinant polypeptide , fusion protein and immunogenic composition comprising a member selected from the group consisting of (a) the amino acid sequence SEQ ID NO:2; and (b) an immunogenic fragment of at least 40 contiguous amino acids of SEQ ID NO:2; wherein the immunogenic fragment, when administered to a subject in a suitable composition which can include an adjuvant, or a suitable carrier coupled to the polypeptide, induces an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2, said immunogenic composition comprising the isolated recombinant polypeptide a pharmaceutically acceptable carrier and an adjuvant. Claims are also drawn to vaccine composition comprising said isolated polypeptide.

The written description rejection is made because the claims are interpreted as drawn to a genus of products recited as " an isolated recombinant polypeptide , fusion protein and immunogenic composition comprising an immunogenic fragment of at least 40 contiguous amino acids of SEQ ID NO:2". To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In this case, the only factor present in the claims is an isolated recombinant polypeptide comprising the amino acid sequence of SEQ.ID.NO:2 structure/function of the product being claimed. There is not even identification of any particular portion of the structure that must be conserved in order to be " an isolated recombinant polypeptide , fusion protein and immunogenic composition comprising an immunogenic fragment of at least 40 contiguous amino acids of SEQ ID NO:2".

The instant specification may provide an adequate written description for an isolated recombinant polypeptide comprising the 276 amino acid sequence as set forth SEQ.ID.NO:2 and is used together with an adjuvant for inducing an immune response. The specification fails to disclose isolated recombinant polypeptide comprising immunogenic fragments of SEQ.ID.NO:2 which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2 which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2

Although drawn to DNA arts, the findings in University of California v. Eli Lilly and Co., 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997) and Enzo Biochem, Inc. V. Gen-Probe Inc. are relevant to the instant claims. The Federal Circuit addressed the application of the written description requirement to DNA-related inventions in University of California v. Eli Lilly and Co., 119 F.3d 1559, 43 USPQ2d 1398 (Fed. Cir. 1997). The court stated that "[a] written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula, [or] chemical name,' of the claimed subject matter sufficient to distinguish it from other materials." Id. At 1567, 43 USPQ2d at 1405. The court also stated that a generic statement such as "vertebrate insulin cDNA" or "mammalian insulin cDNA" without more, is not an adequate written description of the genus because it does not distinguish the genus from others, except by function. It does not specifically define any of the genes that fall within its definition. It does not define any structural features commonly possessed by members of the genus that distinguish them from others. One skilled in the art therefore cannot, as one can do with a fully described genus, visualize or recognize the identity of the members of the genus. A definition by function, as we have previously indicated, does not suffice to define the genus because it is only an indication of what the gene does, rather than what it is.Id. At 1568, 43 USPQ2d at 1406. The court concluded that "naming a type of material

generally known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material." Id.

Finally, the court addressed the manner by which a genus of cDNAs might be described. "A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus or of a recitation of structural features common to the members of the genus, which features constitute a substantial portion of the genus." Id.

The Federal Circuit has recently clarified that a DNA molecule can be adequately described without disclosing its complete structure. See Enzo Biochem, Inc. V. Gen-Probe Inc., 296 F.3d 1316, 63 USPQ2d 1609 (Fed. Cir. 2002). The Enzo court adopted the standard that "the written description requirement can be met by 'show[ing] that an invention is complete by disclosure of sufficiently detailed, relevant identifying characteristics ....i.e., complete or partial structure, other physical and/or chemical properties, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics." Id. At 1324, 63 USPQ2d at 1613 (emphasis omitted, bracketed material in original).

The inventions at issue in Lilly and Enzo were DNA constructs per se, the holdings of those cases are also applicable .The instant specification may provide an adequate written description an isolated recombinant polypeptide SEQ.ID.NO:2, however, the specification fails to teach isolated recombinant polypeptide comprising immunogenic fragment of at least 40 contiguous amino acids of SEQ ID NO: 2 which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2 The specification fails to teach the structure or relevant identifying characteristics of a representative number of species of a representative number of fragments of SEQ ID NO: 2 as per Lilly by structurally describing a

representative number of fragments or by describing "structural features common to the members of the genus, which features constitute a substantial portion of the genus" have to disclosed. In this application such structural features common to the claimed fragments have not been disclosed. Alternatively, per Enzo, the specification can show that the claimed invention is complete "by disclosure of sufficiently detailed, relevant identifying characteristics, functional characteristics when coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics." In this case, the specification does not disclose isolated recombinant polypeptide comprising immunogenic fragments of polypeptide SEQ. ID. NO : 2 which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2, required to practice the claims in a manner that satisfies either the Lilly or Enzo standards. The specification does not provide the complete structure of isolated polypeptide comprising immunogenic fragment of at least 40 contiguous amino acids of SEQ ID NO: 2 which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2 nor does the specification provide any partial structure of such fragments, nor any physical or chemical characteristics of the fragments nor any functional characteristics coupled with a known or disclosed correlation between structure and function other than SEQ ID NO:2. Although the specification discloses an isolated protein comprising the amino acid sequence SEQ.ID.NO:2 , this does not provide a description of polypeptide comprising immunogenic fragment of at least 40 contiguous amino acids of SEQ ID NO: 2 t which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2 hat would satisfy the standard set out in Enzo.

The specification also fails to describe the fragments by the test set out in Lilly. The specification describes only a single polypeptide[s] comprising immunogenic fragment of at least 40 contiguous amino acids of SEQ ID NO: 2 which induce an antibody or T-cell mediated

immune response that recognizes the polypeptide SEQ ID NO:2 that can be used in an immunogenic composition Therefore, it necessarily fails to describe a "representative number" of such species. In addition, the specification also does not describe "structural features common to the members of the genus, which features constitute a substantial portion of the genus." Thus, the specification fails to disclose and does not satisfy the written description guidelines for an isolated protein comprising (open language) immunogenic fragment of at least 40 contiguous amino acids of SEQ ID NO: 2 which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2 .

Thus, the specification does not provide an adequate written description for isolated recombinant polypeptide comprising immunogenic fragment of at least 40 contiguous amino acids of SEQ ID NO: 2. Claims do not comply with 35 USC 112, first paragraph because it is not supported by an adequate written description in the specification.

Applicant states that the examiner's statement that the specification does not disclose an isolated recombinant polypeptide comprising immunogenic fragment of at least 40 contiguous amino acids of SEQ ID NO: 2 is logically untenable and wrong.

The examiner understands that the specification discloses an isolated polypeptide comprising the amino acid sequence SEQ.ID.NO: 2 and therefore, applicants are in possession of an isolated recombinant polypeptide comprising the amino acid sequence SEQ.ID.NO: 2 and an isolated recombinant polypeptide consisting of an immunogenic polypeptide fragment consisting of at least 40 contiguous amino acids of SEQ ID NO: 2. However, the specification fails to disclose immunogenic fragments as claimed because which 40 amino acids of SEQ.ID.NO:2 induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2 has not been disclosed. Applicant reiterates arguments drawn to

immunogenic fragments the arguments were previously considered but not found persuasive for the reasons of record.

7. Claims 55, 58-68 are also rejected under 35 U.S.C. 112, first paragraph, because the specification, while enabling for isolated recombinant polypeptide comprising the amino acid sequence SEQ ID NO: 2, said polypeptide is a recombinant polypeptide , a fusion protein comprising the amino acid sequence SEQ.ID.NO: 2, and an immunogenic composition comprising the amino acid sequence SEQ.ID.NO: 2 and a pharmaceutically acceptable carrier does not reasonably provide enablement for an isolated polypeptide comprising an immunogenic fragment sequence of at least 40 contiguous amino acids of SEQ.ID.NO: 2, where in the immunogenic fragment , when administered to a subject in a suitable composition which can include an adjuvant, or suitable carrier coupled to the polypeptide, induces an antibody or T-cell response that recognizes the polypeptide SEQ.ID.NO: 2 or vaccine composition. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The specification teaches a recombinant isolated recombinant polypeptide comprising the amino acid sequence, SEQ ID NO: 2, which is encoded by BASB111 gene from *M.catarrhalis* strain Mc 2931, ATCC 43617. The specification also teaches that the full-length polypeptide, SEQ.ID.NO: 2 contains 276 amino acids and is useful in diagnosing *M.catarrhalis* infection. Further, the invention teaches that the polypeptide, SEQ.ID.NO: 2 could be used as an immunogen in formulating immunogenic composition in Freund's adjuvant to immunize mice for raising anti polypeptide, SEQ.ID.NO: 2 antibodies. However, the specification fails to indicate or teach any description of any isolated recombinant polypeptide comprising immunogenic fragment of at least 40 contiguous amino acids of SEQ ID NO: 2 which induce

an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2 that are able to and provides no working examples demonstrating (i.e., guidance) enablement for any and uses of the claimed polypeptide.

While the disclosure provides guidance how to make the claimed polypeptide SEQ ID NO: 2comprising the 276 amino acid sequence from, *M.catarrhalis*, the specification fails to disclose an isolated polypeptide comprising an immunogenic fragment sof at least 40 contiguous amino acids of SEQ.ID.NO: 2 which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2. Therefore, the use of said isolated polypeptide comprising an immunogenic fragments of at least 40 contiguous amino acids of SEQ.ID.NO: 2 which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2 fragments in are not yet known or taught by the disclosure. Thus, said polypeptide fragments as claimed are broader than SEQ.ID.NO: 2 and the specification fail to provide sufficient guidance such that one of ordinary skill in the art can predict a priori what isolated polypeptide comprising (open language) an immunogenic fragment sequence of at least 40 contiguous amino acids of SEQ.ID.NO: 2 can be made that will function as full length protein. Isolated polypeptides comprising immunogenic fragments will function as full length polypeptide are not routine in the art. The factors to be considered in determining whether undue experimentation is required are summarized In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988). The court in Wands states: "Enablement is not precluded by the necessity for some experimentation such as routine screening. However, experimentation needed to practice the invention must not be undue experimentation. The key word is 'undue,' not 'experimentation.' " (Wands, 8 USPQ2d 1404). Clearly, enablement of a claimed invention cannot be predicated on the basis of quantity of experimentation required to make or use the invention. "Whether undue experimentation is needed is not a single, simple

factual determination, but rather is a conclusion reached by weighing many factual considerations." (Wands, 8 USPQ2d 1404). The factors to be considered in determining whether undue experimentation is required include: (1) the quantity of experimentation necessary, (2) the amount or direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

The specification teaches an isolated recombinant polypeptide of SEQ ID NO: 2 , BASB111 from *M.catarrhalis* strain Mc 2931, ATCC 43617. The specification also teaches that the full-length polypeptide, SEQ.ID.NO: 2 contain 276 amino acids and is useful in diagnosing *M.catarrhalis* infection. The specification teaches that this polypeptide has been obtained by recombinant cloning. However, the specification fails to indicate or teach any description of any isolated recombinant polypeptide comprising immunogenic fragment sequence of at least 40 contiguous amino acids of SEQ.ID.NO: 2 which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2 that are able to bind to antisera raised against full-length polypeptide and provides no working examples demonstrating (i.e., guidance) enablement for any said isolated polypeptide comprising an immunogenic fragment of at least 40 contiguous amino acids of SEQ.ID.NO: 2 which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2 as claimed. The teaching of the specification cannot be extrapolated to enable the scope of the claims because the claims as broadly drawn to include isolated recombinant polypeptide comprising immunogenic fragments and is acknowledged to be unpredictable because the specification fails to disclose the critical residues that are important for any changes made in a polypeptide to obtain said isolated recombinant polypeptide comprising fragments of SEQ.ID.NO: 2 which induce an

antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2 that can be used. The specification provides no information on the immunogenicity of isolated recombinant polypeptide comprising immunogenic fragment sequence of at least 40 contiguous amino acids of SEQ.ID.NO: 2 which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2 or the ability of such isolated polypeptide comprising an immunogenic fragment sof at least 40 contiguous amino acids of SEQ.ID.NO: 2 which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2 to be used in diagnosis or treatment etc. The specification fails to teach that the claimed fragments which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2are capable of generating a humoral or cellular immune response such that broadly claimed fragments can be used .

The specification fails to teach any immune response generated by means of isolated polypeptides comprising fragments which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2. As per vaccine claims 64-67, it is well recognized in the art, that it is unclear whether an antigen(s) derived from a pathogen will elicit protective immunity. Ellis, R.W. (Chapter 29 of "VACCINES" Plotkin, 5.A. et al. (eds) published by W. B. Saunders company (Philadelphia) in 1988, especially page 571, 2nd full paragraph] exemplifies this problem in the recitation that "The key to the problem is the identification of that protein component of a virus or microbial pathogen that itself can elicit the production of protective antibodies.... and thus protect the host against attack by the pathogen". The specification fails to teach polypeptide comprising fragments thereof. In the absence of a teaching of the claimed polypeptide comprising fragments of SEQ.ID.NO: 2 can generate an immune response that is effective, the specification is not be enabled for claimed isolated recombinant polypeptide comprising fragments of SEQ.ID.NO:2. In view of the unpredictability

of the art, the lack of teachings of the specification, it would require undue experimentation on the part of the skilled artisan to practice the invention as claimed.

Applicants' arguments filed on 11/14/05 have been fully considered but they are not deemed to be persuasive.

Applicant keeps on arguing about the rejection and states that the examiner does not question the immunogenicity of the BASB082 fragments itself. Applicant now provides another set of Exhibits A-D(published journal articles) relating to various short peptides that were used to generate antibodies.

The examiner has reviewed the exhibits A-D relating to synthetic peptides and understands that short peptides consisting of 6 or 7 or 8 amino acids have been used to raise antibodies and for epitope mapping. However, the examiner is not stating that synthetic peptides can not be used for raising antibodies etc (i.e., immunogenicity) or for mapping epitopes . However, it would not be possible to determine with any predictability whether the antibodies produced from an isolated recombinant polypeptide comprising fragments of SEQ.ID.NO: 2 which induce an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2 recognizes the polypeptide SEQ ID NO:2. In other words, it is unpredictable that isolated polypeptide comprising an immunogenic fragments of SEQ ID NO:2 are exposed on the surface of SEQ ID NO:2. Only in answer to applicant's arguments ,Roitt et al, 1998, Immunology, 4th ed, Mosby, London teach that although it is possible to produce antibodies to almost any part of an antigen, this does not normally happen in an immune response. It is usually found that only a certain areas of the antigen are particularly antigenic, and that a majority of antibodies bind to these regions. These regions are often at exposed areas on the outside of the antigen, particularly where there are loops of polypeptide that lack a rigid tertiary structure (p.7.7-7.8). This is exemplified by the teaching of Holmes (Exp. Opin.Invest. Drugs, 2001, 10(3):511-519) who teaches that rabbits were immunized with

synthetic peptides which in each case generated high anti-peptide specific immuno reactivities, however, none of the antibodies exhibited binding to the full length antigen. The author concludes that 'Presumably, expression of these epitopes in the context of the protein was important and affected the antibody binding ability (p. 513, col 1). Furthermore, this does not take into account the 3 dimensional folding of the native molecule, nor its glycosylation or other post-translational modifications and other characteristics which are of significant importance in an antibody response. Peptides or synthetic antigens cannot effectively substitute for the natural tertiary and quarterary structure of a protein in a physiological situation. Further, there is no teaching in the specification of which part of the protein should be used to produce antibodies which will bind specifically to SEQ ID NO:2.

Moreover, as written, the claims encompass claims to defining specific epitopes of SEQ ID NO:2. However, there is no teaching in the specification of whether or not the epitopes are linear or comprise 3-dimensional structures. Herbert et al. (The Dictionary of Immunology, Academic Press, 4th edition, 1995, p.58) define epitopes as the region on an antigen molecule to which antibody or the T cell receptor binds specifically wherein the 3-dimensional structure of the protein molecule may be essential for antibody binding. However, the specification fails to disclose sufficient guidance and objective evidence as to the linear and or three-dimensional conformation of the polypeptide fragments which constitute epitopes recognized by the claimed invention. Antibodies bind to structural shapes that may be linear stretches of amino acids, conformational determinants formed by the folding of peptides, carbohydrate moieties, phosphate or lipid residues or a combination thereof. Moreover, as evidenced by Greenspan et al., defining epitopes is not as easy as it seems (Nature Biotechnology 7:936-937 (1999). Even when the epitope is defined, in terms of the spatial organization of residues making contact with ligand, then a structural characterization of the molecular interface for binding is necessary to

define the boundaries of the epitope (page 937, 2nd column). Since the specification has not identified which amino acids and or polypeptide fragments are critical or essential characteristics of the epitope, it would not be predictable, to one of relative skill in the art, that such methods employing agents would be specific for any epitopes on SEQ ID NO: 2.

Further, as drawn to recognition of the protein by T-cells from patients Herbert et al, teaches that T-cells recognize peptide fragments which have been processed by an accessory cell and presented in the cleft of a class I MHC antigen or a class II MHC antigen and that a continuous primary sequence is necessary for T cell recognition (p. 58). It is obvious that T cell epitopes and antibody epitopes are not the same. However, the issues drawn to the lack of guidance in the specification as to critical residues and polypeptide fragments required for T cell binding are relevant to this limitation as well. Further, even if the peptides claimed were 100% identical to specific portions of SEQ ID NO:2 it would not be possible to determine with any predictability which of the portions of SEQ ID NO:2 comprise T cell epitopes that would be recognized by T-cells from patients.

Given the undefined nature of the critical amino acids needed, one is left with random experimentation. To determine which amino acid are critical for the claimed sequence, random experimentation is undue. Applicant's specification or the state of the art neither teach nor disclose the claimed fragments isolated polypeptide comprising an immunogenic fragment which induces an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2, A person of ordinary skill may be able to make those claimed isolated polypeptide comprising an immunogenic fragment of SEQ ID NO:2 but one cannot predictably identify those that will function (i.e., induces an antibody or T-cell mediated immune response that recognizes the polypeptide SEQ ID NO:2) as claimed.

The specification provides insufficient guidance with regard to these issues and provides no working examples which would provide guidance to one skilled in the art and no evidence has been provided which would allow one of skill in the art to predict that the claimed isolated polypeptide comprising immunogenic fragments of at least 40 amino acids of seq.id.no:2 which induce an antibody or t-cell mediated immune response that recognizes the polypeptide SEQ.ID.NO:2 (i.e., fragment variants)would function as claimed with a reasonable expectation of success. For the above reasons, it appears that undue experimentation would be required to practice the claimed invention.

15. Claims 55, 58, 59, 61, 62, 63-64, 66, 67 and 68are rejected under 35 U.S.C. 102(e) as being anticipated by Breton U.S.Patent 6673910.

Claims have been discussed supra.

Breton discloses an isolated polypeptide comprising an amino acid sequence SEQ.ID.NO: 2991 which has 118 amino acids and is 100% identical with the claimed polypeptide (please see the sequence alignment, QY indicates SEQ.ID.NO: 2 of the claimed invention and Db represents the prior art protein) comprising at least 40 amino acids (polypeptide, SEQ.ID.NO: 2 from position 47-103) and thus anticipated claims 55, 58, . The prior art discloses maltose receptor (outer membrane protein of E.coli) as a peptide fusion partner (column 34, lines 15-30 in patent) and thus discloses fusion protein as claimed in claim 59. Further the prior art discloses a vaccine composition (intended use of composition) comprising *M.catarrhalis* polypeptide, SEQ.ID.NO: 2991 with pharmaceutical carrier such as buffer, adjuvant, glycerol etc (see column 37-38) or killed E.coli preparation with an immunogenic fragment of peptide of the invention expressed on its surface or E.coli lysate, wherein the killed E.coli acts a carrier (see column 39, lines 58-63). Further, the prior art discloses one or more surface proteins as vaccine a composition (see column 37, lines 8-20) for *M.catarrahalis* and

thus anticipates a vaccine composition comprising immunogenic fragments /polypeptide and one other *M.catarrhalis* antigen in a pharmaceutical carrier as claimed in claims 62, 63, 64 and 66. The prior art also anticipated claim 68, a method for inducing an antibody response as mice or rabbit or hamsters can be immunized (administered) with immunogenic fragment such as the disclosed polypeptide, SEQ.ID.NO: 2991(see column 40, lines 16-21). Therefore, the claimed invention is anticipated by the prior art.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP ' 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for response to this final action is set to expire THREE MONTHS from the date of this action. In the event a first response is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will the statutory period for response expire later than SIX MONTHS from the date of this final action

9. Papers related to this application may be submitted to Group 1600, AU 1645 by facsimile transmission. Papers should be transmitted via the PTO Fax Center, which receives transmissions 24 hours a day and 7 days a week. The transmission of such papers by facsimile must conform to the notice published in the Official Gazette, 1096 OG 30, November 15, 1989. The Right Fax number is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PMR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PMR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PMR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Padma Baskar Ph.D., whose telephone number is ((571) 272-0853. A message may be left on the Examiner's voice mail system. The Examiner can normally be reached on Monday to Friday from 6.30 a.m. to 4.00 p.m. except First Friday of each bi-week.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's acting supervisor, Jeffrey Siew can be reached on (571) 272-0787. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1600.

SUSAN UNGAR, PH.D
PRIMARY EXAMINER

Padma Baskar Ph.D